OUR HARDY GRAPES:

WHAT TO PLANT;

HOW TO PLANT, TRAIN, AND MANAGE THEM.

BY J. M. KNOWLTON,
TARRYTOWN, N. Y.

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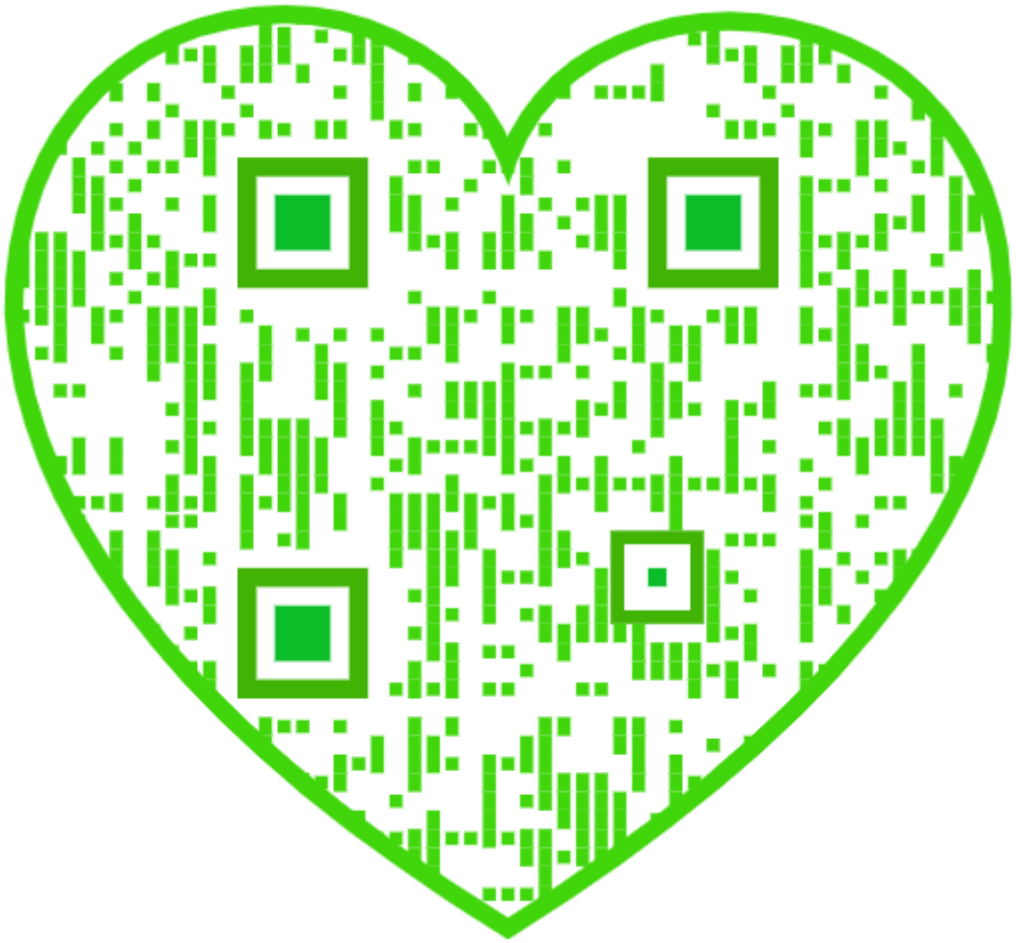

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PREFACE.

THE subject of Grape Culture has attracted so much attention, during the last few years, and the varieties under cultivation, as well as the amount of land cultivated has increased so much, that the public mind has been awakened to its importance; and the questions treated of in this little book are often asked, and on every side. It seemed, therefore, proper that a small work should be prepared, embracing, in a short and concise form, the principal topics necessary to a thorough understanding of the subject.

That the Author of this little treatise has accomplished a task which will make the reader comprehend any of the new and scientific theories with regard to grape culture, he does not claim; nor that he has unveiled any mystery before hidden. His aim has been only to give plain and explicit directions, in such language that all can understand, and so simple that all can follow. The art of grape growing depends on the commonest laws of production and increase, and he has tried to lay before his readers such practical direc-

tions, as one would give to his assistant in the actual operations of the field or garden. He has endeavored to tell what and how to do, more than what could or might be done, and to deal with facts, rather than with theories. He has purposely left out the mention of many varieties not generally known, not thoroughly proved, or easily procurable, and has said nothing of wine making in detail, because he believes that most of the grapes raised in the vicinity of our seaboard cities, will be wanted for many years to come for table purposes, and those who have any idea of making wine at present, in the localities mentioned, will find it less profitable than fruit growing.

Knowing that success depends on careful culture, and obedience to nature's laws, he has endeavored, only so far as these go, to explain the secret of success; and, hoping he may be instrumental in spreading and increasing the love and knowledge of the best of fruits, he commends his work to the kind consideration and indulgence of its readers.

OUR HARDY GRAPES.

CHAPTER I.

OUR HARDY GRAPES! WHAT TO PLANT—HOW TO PLANT, TRAIN AND MANAGE THEM.

For a person about to engage in the culture of the grape, the first question which naturally presents itself is, what variety shall I plant? and the question more readily arises in consequence of the great multiplicity of varieties which have arisen during the last ten years. When we had but the old kinds—Isabella, Catawba, &c, it was very easy to decide whether it was profitable or not to engage in the culture; as the profit was in exact accordance with the adaptability of the particular location to these particular species. In the neighborhood of Cincinnati, on the islands of Lake Erie, and in some other favored localities, the Catawba has been for a long time, and still is, to a great extent, the particular vine. At Croton Point, Nyack, Rockland Lake, and wherever, as a general rule, in this latitude, there is an eastern or southern inclination, in the vicinity of water, all our hardy northern va-

rieties will succeed; but more particularly the Isabella, is the great market variety. New York and Boston are supplied with it. It grows on almost every cottage wall, and in every private garden—acts as a border and covering to walks, and as a screen to kitchen doors, and is in fact, in the neighborhood of New York, the grape for the people. In flavor, it is delicious, and grows upon the taste with long continued use; rarely failing to give a good crop, and, in the locations mentioned, notwithstanding the introduction of other varieties, perhaps four-fifths of the grapes sent to market are Isabellas.

Yet with all these facts it is essentially a local grape. In many instances, two miles from the places where it is most cultivated, it will not grow at all. A dividing ridge of land, a little variation of soil, the prevalence of particular currents of air, and many other causes, may mark the line between great productiveness, and almost total barrenness. The Catawba, as a general rule, in the neighborhood of New York and further north, will not ripen at all. To be sure of ripening it must have protection, natural or artificial. Large quantities of Catawba grapes are annually sent to market, which are bought and eaten with relish by the mass of the citizens, who manage, in some way, to digest the unripened centre, and fancy that they like the acid and often acrid juice between that centre and the skin; but which are no more like the ripe, sweet, fragrant Catawbas of Kelley's Island, Pleasant Valley and Cincinnati, than the Bell Pear is like the Bartlett, or the penny orange of the huckster like the luxurious Havanna.

It is therefore plain, that grape-culture could never become general so long as we possessed these varieties alone; and therefore grape-culture was confined to few individuals, and to particular locations, until the multiplication of seedlings and Hybrids, and new varieties, demonstrated to a certainty, that the United States must become in time a grape-growing country.

That this result is sure to be attained, and that our grape interest must, in a short time, be second too no other interest in the country, in its pecuniary importance, must, we think, be clear to the mind of every reflecting individual: and, as the vine increases in productiveness, and the size and flavor of its fruit with age, it behoves every one to decide at once what variety he will plant, and how soon he will begin to plant it.

We have seen a Catalogue of hardy native grapes amounting to 393 varieties. Of these, perhaps 50 may be worth cultivating—20 may be very good, and worthy a place in every collection where variety and the gratification of horticultural taste is the object; and 10 of superior excellence, from which 5 or 6 might be selected as first class, and worthy and profitable for general cultivation.

Perhaps the earliest, or as early as any on the list, is the Hartford Prolific. It has a large, rather compact bunch; berry above medium size, round—skin thick and black—juicy, sweet, and with considerable of the native flavor, called perfume by some, and is wonderfully productive. It is very hardy, will grow in almost any situation, and with very little care. It is said to improve wonderfully under proper

culture, and with systematic, close pruning, and is considered by many as a superior and profitable grape.

We do not, however, think that it has much to recommend it, except its earliness and hardiness: and even in these it is so little superior to other varieties which have other excellencies, that it is scarcely to be cultivated, except for the sake of variety.

The Concord is a grape ripening almost as early as the preceding. It is a strong, vigorous grower, throwing out thick canes which extend a great distance, producing its fruit fully and plentifully, requiring but little care, yet amply repaying any extra care bestowed upon it. The berries and bunches are both very large, almost black, covered with a beautiful bloom. The flavor is much like the Isabella, a little more musky perhaps; but this muskiness constantly decreasing with age and culture. The vine is healthy, not subject to mildew or rot, and one of the most certain to produce good results of any variety that we have. It is said to make good wine, but we scarcely think that possible in the neighborhood of New York, without the addition of sugar; and in our estimation a mixture of fruit juices and cane sugar is not wine. We have tasted wine made from the Concord without the addition of sugar; but it was thin, without body, and probably would not keep. Yet the Concord as a market grape, is probably among the best and most profitable that can be cultivated. It has been extensively disseminated, and will in all probability be planted more extensively than any other variety except the Delaware, for many years to come.

The Delaware is a light red or wine colored grape, of

rapid but short jointed growth, and a peculiar delicacy and richness of appearance, which makes it one of the most attractive vines we are yet possessed of. Since its introduction it has been the theme of more controversy, and has called forth the expression of more variety of opinion, than any vine we have ever heard of. The first advocates and proprietors of the Delaware were so convinced of its great value, that they devoted nearly all their energies to propagating it and urging its sale, leaving the production of fine specimens of fruit out of the question; being satisfied that this would speak for itself in proper time. Every thing in the shape of wood was used for propagation; even green shoots were resorted to. The trimmings of the vines were estimated at a rate, which yielded a considerable income to those owning many of them. It was layered, raised from single eyes, raised in hot-beds, in the open air, root-grafted, layer-grafted, and multiplied in every way that it was possible to conceive. In this way it would be strange if the constitution of the vine did not deteriorate. Many plants were sent out not larger than a knitting needle, and so feeble that they would scarcely bear removing. In this way it was soon reputed to be a weak grower, and many were disgusted, and gave up trying to raise it. But it soon rallied, and has more than sustained its first reputation.

The vines recently sent out have been of strong and vigorous habit, often making a growth of from 5 to 10 feet the first season; and the second season nearly as vigorous, according to its habit, as the Concord. It has proved itself hardy under all circumstances; from the frozen regions of Maine, to

the burning hill-sides of Southern Ohio; is, as a general thing, more healthy than most of its neighboring vines—can endure heat, cold, drought, wet, or any other circumstances which are usually so injurious to the grape grower's interest: and by all these qualities, with its earliness, productiveness, and flavor, has become first in the list of American vines.

Another objection urged to it, was that the berries were small. The first specimens of fruit were from young or uncultivated vines, which gave but imperfect examples of fruit; but it has been constantly increasing in size of berry and bunch, until it bids fair to rival other varieties.

In the April number of the Horticulturist for 1863, is a portrait of a bunch of Delaware grapes, taken from the vineyard of a distinguished vine-grower of Newburgh, which the Editor assures us is a fair sample, and an exact portrait. This bunch is about 6 inches long, 4 inches wide at its greatest breadth, and most of the berries at least half an inch in diameter.

In flavor it is sweet, rich, sprightly and vinous, tender to the centre; the bunch compact and shouldered; and its productiveness, steady, regular and abundant. It is placed by most vine-growers at the head of American grapes; and gives promise of even more than it has already performed.

The Diana is a seedling of the Catawba, and is second in flavour only to the Delaware. It resembles its parent in appearance, is not quite as large; of a roundish form, and a lively reddish color. It is earlier and hardier than the Catawba; more vigorous, of sprightlier flavour than the Catawba found here; and altogether a most desirable variety.

The above four varieties are perhaps best suited for general and vineyard culture; and can be relied upon as hardy, productive, and profitable grapes.

The Creveling or Catawissa is much prized in some localities, and resembles closely the Isabella, except that it is earlier.

The Union Village, said to be a seedling of the Isabella, originated by the Shakers of Union Village, Ohio—resembles the Isabella in quality, but is much larger, both in bunch and berry. The flavour is sweet and delicate, and it ripens some time before the Isabella. The growth is very large both in cane and leaf, and it is a very superior variety. But it is slightly tender, requiring the protection of a wall or side of a house, in order to insure its safe wintering.

The Anna was claimed on its introduction some ten years since, to have supplied the want long felt of a good white grape. It originated in the garden of Mr. Eli Hasbrouck at Newburgh, and first bore fruit in 1851. It is a beautiful white grape, varying from light ambre, to green or pearly white; and has a sweet, rich, vinous flavor, somewhat spicy, with a little toughness at its centre, in the fruit of young vines, but which is said to disappear as the vine increases in age. It is a hardy and vigorous grower, much resembling the Catawba in leaf and stem, and ripens generally from the first to the middle or end of October. It is however urged against it, that it ripens late, and it will probably only arrive to perfection at the first period mentioned, under favorable circumstances. It was for a long time recommended as the

best white grape, and undoubtedly possesses merits which entitle it to favorable attention.

The Rebecca is another white grape of much beauty, and great delicacy of flavour; but is deficient in healthy foliage, and has not succeeded, except in most favorable localities. It cannot be relied upon, and therefore the prudent vine-grower will not devote much time, or money, or space to its cultivation.

Allen's Hybrid raised by Mr. J. Fisk Allen, of Salem, Mass. is a Hybrid, or cross between a foreign variety and the Isabella. It is a white grape which has been highly praised, and after several years of testing, is said to be hardy and vigorous. Berries large, green Amber color; flavor rich, vinous and delicious; bunch large, and said to retain the fruit without dropping to the last. It promises, as far as known, to be one of our best grapes, both for vineyard or table, second only to the Delaware.

Roger's Hybrids of the same class, of which some 12 or more varieties are before the public, are produced by crossing the Mammoth or wild grape of New England, with the foreign varieties, Black Hamburgh and Chasselas. They are said to possess the hardihood, vigor, and early bearing properties of the native, with the richness of flavor, productiveness, &c. of the foreign. They are of different sizes and colors, and promise to be, many of them, everything that can be desired; but as yet are too little known to be recommended for general cultivation.

Cuyhoga is also a white grape, highly spoken of, recom-

mended for delicious flavor, vigor, &c. but is as yet but little known.

Maxatawney is also a white grape, new; said to be good, but late.

To-Kalon has been named for its beautiful appearance, and has a large berry, blueish black, with bloom, sweet delicate flavour. It ripens about the middle of September; but is said sometimes to fail to set, and drop its berries badly.

The Herbemont is a vine of an entirely different class. Tender, requiring protection or laying down in winter until it attains the age of three or four years; and also to have its shoots "stopped" or pinched in, in order to insure ripening of the wood. It is a beautiful vine in vigor of growth, and its fruit is very attractive. The berries are small, but the bunch very large, often doubly shouldered; color dark blue, sweet, spicy, juicy and vinous.

Elsingburg. This is a variety somewhat resembling the Herbemont in berry and bunch, but if anything smaller. It is a black grape, with a slightly blueish appearance; the bunches often very long, and shouldered, and of a rich sugary, vinous flavor. It is hardy and healthy, but not as uniformly productive as some. Is earlier than Isabella; but is objectionable on account of the size of its berries, which are much below medium size. It is, however, a good variety for a garden collection; and its tender berry and rich flavor will afford peculiar gratification to the lovers of fine fruit. It is said to have originated in Salem county, New Jersey.

Lincoln and Lenoir very closely resemble each other, and

scarcely present sufficient distinct characteristics to render them desirable.

York Madeira is a grape which has been widely disseminated under various names, such as Canby's August, Hyde's Eliza, Shepherd's Port-wine Grape, Baldwin's Early, Schuylkill Muscadel, Cape Grape, &c. It is a very sweet grape, but yields but little juice, and is earlier than the Isabella. It will make good wine, and has been cultivated at the west for that purpose; but is not profitable on account of its want of juice.

Clinton has a small compact bunch, shouldered, small round berry, and produces great and regular crops. It is very hardy, will grow anywhere, and is very handsome to look upon; but in our opinion hardly fit to eat. It is said to improve, however, by keeping, and to be better after a slight frost. But we should hardly put it in a place which might be occupied by a better vine.

Marion and Oporto are wine grapes, largely advertised as such; but are not fit for the table—except for those who are not over particular about what they eat, or over fastidious as regards flavour. We would advise to leave them out, except cultivated exclusively for wine, in which capacity they are far inferior to many other varieties.

Iona is a new seedling variety, introduced the present season by Dr. C. W. Grant, of Iona Island. Those who have seen and tasted it, speak in high terms of its excellence and flavor. We know nothing of it personally, and therefore append Dr. Grant's description in his own words. Speaking of the Iona and Israella, his two new seedlings, he says:

"One named the IONA bears a large bunch, with large berries; is of a very peculiar wine color, with few and very small seeds, and is of uniform consistency throughout its flesh, from outside to centre, and more nearly resembles the Red Frontignan (foreign) than any other grape. It is transparent, fleshy, and tender, like the Frontignan, and is even more spirited and vinous in its flavor, and makes more spirited raisins. It does not decay, but may be kept all winter on the shelves in the fruit room, adhering firmly to the bunch, and drying readily to raisins."

"It is an early and profuse bearer, never having failed to ripen a full crop; and has never been afflicted with rot, or unhealthiness. It bore and ripened a great number of bunches the third season from the seed."

"The habit of the vine is the very best; and I would not know in what respect to ask to have it altered, to make it more valuable."

"Season of ripening fully two weeks before the Isabella. By flowering late, it avoids danger from spring frosts."

"The ISRAELLA is a large black grape, that ripens one week before the Iona, and like it, is a very late keeper, holding firmly to the bunch; and when fully ripe becoming quite sweet to the centre. It is very rich, sugary, and vinous, with a very excellent and peculiar flavor."

"The vine is very healthy in its foliage, hardy and productive, and bears early. Plants but one year old are now ripening from four to six large bunches each."

Montgomery Grape. There has been exhibited at the different fairs, this autumn, more particularly at the American

Institute Fair, a medium sized, pale green grape, of the above name. The berry is very beautiful, and the bunches very long, compact, and shouldered. It has every appearance of a foreign grape; but we are assured that in Dutchess County, and that neighbrohood, it flourishes in the open air. It's flavor, as far as we have tasted, is pleasant, sweet and vinous; and the flesh solid, like a foreign grape. It resembles the Chasselas, and is probably a seedling of that variety; but as yet too little known, and too limited in its area of cultivation, to warrant a definite opinion as to its merits or adaptability to our climate.

There are many other varieties undoubtedly worthy of cultivation, but as yet confined to particular localities. We consider that the above varieties furnish everything that can be desired in a grape, so far as their qualities are known; and as far as we have progressed in cultivating and propagating this kind of fruit. New varieties may be brought forward superior to those we already have; but thus far any reasonable taste may be gratified, or ordinary market demand supplied, by selection from the above list: and we would recommend those interested to rely in large planting, upon well-tried and established varieties, rather than upon those not yet proved, and more suited to the amateur, than the professional culturist. Those who are curious, can learn much from the advertisements and notices in different publications, making all due allowances for interested testimony, and conflicting statements.

CHAPTER II.

WHERE TO PLANT—HOW TO PLANT.

The next question is the choice of situation of the Vineyard, the kind of soil, the preparation of the ground, and the time and manner of planting.

There is one thing requisite to the obtaining good results from any vine or vineyard, and that is sunshine. Without this for a good portion of the day, all other conditions of success will be found to be of no avail. Good grapes have been produced in orchards, or other situations partially shaded by trees; but they have been comparatively poor crops, and not equal in quality to those grown in the full sunlight. Occasionally a vine growing upon an arbour, partially in shadow, for a good portion of the day, may produce fruit, owing to richness of border or other favorable circumstances; but this is the exception, rather than the rule; and it will be found that the vines invariably push to the light as those do, growing in their native forest, and produce their best fruit at the extremities.

So, also, with exposure. A perfectly level piece of land, with the clear sun-light upon it, unobstructed by any object, will make a first-class vineyard. So, also, the western, or even northern sides of hills, gently inclined, will produce fair

crops of Delaware, Concord, Diana, Hartford, Prolific, &c. or other hardy varieties, under careful culture: but such land had much better be applied to other purposes, appropriating the more favorable situations to the culture which will produce the best and most profitable results.

An inclination of an inch to the foot, to the south or south-east, will be found almost equal to a degree of latitude; and these southern and eastern exposures are plentiful in all the country in the neighborhood of New York. Thousands and thousands of acres on the Hudson, in Connecticut, New Jersey in the eastern counties, and which are now devoted to pasture; under even moderate culture, would yield a ten-fold return in grape culture. Even steep hillsides, inclining to the south or east, can be easily made into vineyards; and, with the abundance of muck and other fertilizers, can be made profitable.

Soil is the next consideration. Any soil of moderate fertility, which is not wet or heavy, or subject to standing water, can grow the grape. It had better be too light and too sandy, than too wet; and it is very necessary that the drainage should be perfect. If it is not so, underdraining must be resorted to, and drains put down three feet below the surface to carry off the surplus moisture. We have seen vines growing in soil which seemed so light that it would scarcely raise grass; and the best of vines, in a sandy loam of dark color, filled with round stones, from the size of a pea to that of an egg. This soil had been deeply worked, and moderately enriched, to the degree of good garden fertility.

As a general rule, any soil which will grow corn, or pota-

toes, or wheat, or even rye, will grow grapes. The grape is a gross feeder, sending its rootlings far and wide, and is not over-particular upon what it feeds. Its main requisite is a good deep soil, with a porous subsoil, and an exposure not subject to violent winds or sudden changes of temperature. This is one reason why the vicinity of large bodies of water, which always exerts an influence upon the atmosphere, is so beneficial and favorable; the best vineyards in the United States being in the neighborhood of water.

A good garden soil, which has been trenched to the depth of two feet, or even deeper, presents the best condition for cultivating the grape. We do not believe in acrid, recent manures; nor do we believe in special fertilizers, particularly adapted, as stated by their proprietors, to make wood or fruit, grow. If your ground must be enriched, let it be by good, well-rotted barnyard compost. Nothing better than muck, composted with the refuse of the stables, liquid and solid, straw, &c. all well fermented and decomposed, and mixed in moderate proportion with the soil—and then soil and all thoroughly worked, so as to present a homogenous mass, finely pulverized, and of even consistence, to the requisite depth. There can be no border or garden bed better than this, unless it be made so by deeper working, which, where expense is no object, may be carried to three feet, and then, exposure and other things being right, and the vine properly planted, the best and most permanent results possible may be looked for and confidently expected.

For planting on a large scale, the ground should be thoroughly ploughed in the latter part of September, or

first of October, earlier if practicable; and if sod ground, the sods may be allowed to lay and rot for three or four weeks without any molestation. If not sod ground, we would trench plough at once; that is, would plough twice in the same furrow, with a person to hold on to the beam in order to make the furrows as deep as possible. A good plough for this purpose is one made with a shifting or revolving mould-board, commonly called a side-hill plough, and which leaves no dead furrows. Should the subsoil turn up yellow in appearance and barren, it will be necessary to add fertilizers to it before the next operation. This fertilization may be accomplished by the addition of the mixture above mentioned; that is, good stable manure composted with muck, or with the product of the general compost heap of refuse matter, which should exist on every farm and country place. Good top soil may also be taken from another field, and carted upon the one in preparation, or decomposed sods, than which nothing is better; or any other substance which will add decomposed vegetable or animal matter to the soil.

The next operation may take place in November or December, immediately before the approach of severe frost; and may consist of cross-ploughing if practicable, in all respects like the former; except that we would recommend the employment of extra hands to follow the plough with shovels, and throw out the earth loosened by it, in order to obtain greater depth. The plough may also be passed a third time through the furrow if necessary. If by these means a thorough working, to the depth of twenty or twenty-four

inches has been accomplished, and the soil be made by proper additions of sufficient fertilizers, the preparation may be considered sufficient, and the ground be allowed to rest for the winter, in its rough state, so as to be acted upon and pulverised by the frost, preparatory to its being planted in the spring.

It may appear to some that this preparation of the vineyard is rather elaborate, and involves more trouble and expense than is necessary. But there is not as much trouble in it as would appear from description; and a person who is making preparation for a work which is to last for several generations, certainly ought not to regret a few extra days or dollars expended upon its foundation.

As we have said before, grapes will grow under almost any circumstances; but good grapes can only be grown by following out the imperative laws which govern their production. A vine which is to last for 50 or 100 years must have a sufficient amount of nourishment laid up, and sufficient room for its roots to answer the demands of its healthy and permanent developement.

It will also be seen that we only contemplate spring planting. In vineyard culture we should never think of planting at any other time than in the spring; not only on account of the previous preparation of the ground, but also on account of giving the transplanted vines a good start, before exposing them to the rigors of winter. In the garden, a single vine, or a few vines may be planted in the fall, because then the ground is always supposed to be at least partially prepared; and a few vines can be properly protected in their

places from the frosts of their first winter, and be ready to be uncovered and take an early start in the spring, without having suffered from being compelled to enter upon their new state of existence during a dormant and frozen season.

Nor would we, if possible, select or purchase vines at any time, except the autumn. We certainly think that the poorest vines are sent out in the spring; and they most always come too late, and are injured in transportation and setting. We would order the vines, by all means, in August or September, and manage and take care of them through the winter as hereafter directed. The ground being prepared the autumn previous, and having lain in the condition just described, during the winter, will be ready for planting as soon as the severe weather is over, and the frost sufficiently out to permit working. An iron tooth harrow should then be passed over the surface, properly loaded, if necessary, until the surface is made smooth and even, and the lumps, if any remain from the winter's freezing, well broken. The rows may then be staked out, and preparation made for planting. These rows should, if the nature of the ground permit, run east and west, as we believe that position will give more sunshine, and shade less space, upon ground, level, or nearly so, than any other direction in which they can be placed. Should the ground incline much in any direction, the rows should run at right angles to the slope of the ground; or, in other words, directly across its face, in whatever direction the inclination may be.

There is considerable difference of opinion as to the distance of vine planting; but we believe all agree that the

rows should be at least six feet apart, in order to insure sufficient light and air, and room for working. The distance in the rows varies according to the practice of different parties. Mr. Mottier, of Cincinnati, plants his Delaware vines, we believe, three feet apart in the row. Dr. Grant advocates from two to four feet. Dr. Underhill, of Groton Point, whose vines are Catawba and Isabella, about eight feet—the vine-growers of Nyack and other places, with Catawba, Isabella, Concord, Hartford, Prolific, &c. seven to ten feet: which last distance we much prefer for strong, growing vines. Indeed the Concord will easily cover a space of twice that distance, and produce good fruit; while the Delaware may be restricted to narrower bounds. But with our experience of its rampant growth, we should much prefer to give it at least ten feet.

The argument is, that a greater number of vines to the acre, the vines being set closer, will give more fruit, and of better quality, than to set fewer vines, and farther apart. We do not believe that the close system of planting, and which involves also close pruning, will answer in our American climate, with the luxurious growth which it induces; as we have found that the vine *will* extend its shoots; and it is almost impossible, with pinching and summer pruning, to keep it within bounds.

Should the distance of ten feet be decided upon, the first vine in the row should be set five feet from the place of the first trellis-post: that is, the trellis-post at the end of the row, the vine five feet from the post; then another vine ten feet from the first vine, and so on to the end of the row

The trellis-posts we would not put out until the second or third spring from planting.

Proceed, then, after having fixed the rows and distances, to dig a hole three feet square and two feet deep for each vine, throwing up the earth out of the hole, and making a neat heap of it by the side—preferably the north side—to afford protection to the young vine. Then fill the hole, moderately compact, to within about six or eight inches of the top, leaving the residue of the earth in a neat conical heap, as before directed. Upon the surface of the hole, six or eight inches below the surface of the vineyard, the vine is to be planted, and this sunken surface treated, for the first season, precisely as if it were the surface of the field. Before planting, and after the surface is prepared ready for the reception of the vine, each vine must be staked with a stake of any suitable material, than which nothing is better than a bean-pole of cedar or chestnut, or other good wood. As these stakes may require to stand two years, it is best to put in good stakes, and to do it thoroughly at first. Do not plant the vines first, and then stake afterward, as in that case you will disturb your vines: besides, in all probability, getting your rows crooked: but set your stakes by a line, and then proceed to set your vines to the stakes.

This important operation must be performed with care, not hurriedly, but giving its due attention to each individual vine and root, and seeing that every one is in its proper place. Set your vines at the right depth, about three or four inches deep, according to size; or at as nearly as possible the exact depth at which it formerly grew.

Taking your vines from the trench in which they have been kept during the winter, they having been root and top pruned the fall previous, as described in the Article on heeling in and keeping through winter, (for which see page 56,) have ready a large basket, with some fine straw, or hay, or moss, properly moistened, and take out no more at a time from the trench than you can conveniently protect in the basket with wet straw or moss, as the roots of the vines should not be exposed to cold air, or drying winds, or sunshine, for an instant more than necessary: then, having arranged your basket, take it to your row of holes—take out a vine, cover up the rest; and, getting down to your work, having previously made a slight excavation with your spade, set your vine with your hands, (there is no other way to do it,) and take each root by itself, and see that it is properly packed with earth; the roots being properly spread out in the right direction, so that no one root thall touch its neighbor. Be careful, also, to see that the crown, or hollow underneath the stem, from which the roots diverge, is properly packed, or filled with earth; as, unless this is done, the vine there, may generate mould, which would injure its health. All this work must be done with the hands and fingers, and the earth gently pressed or beaten with the hand, so as to give it moderate compactness, but not too tight. It is best, also, in some instances, to have at hand a basket of good fine garden mould, not manure, to put next the roots, where the ground is not as finely prepared as it should be; but when it is well prepared this is unnecessary.

Having faithfully set your vine as above directed, carefully

cover to proper depth, that is natural depth, and smooth the surface with the hand, using your fingers as a rake, until the surface is level, and the process completed. Then tie your vine to the stake with a piece of soft twine, so loose as by no possibility to cut it while growing; and proceed to the next vine, and so on, until your basket is empty.

We regard this method of planting beneath the surface, as far better than any system yet adopted; not only tending to keep the vine from the effects of drought, the first season, but enabling it to form good and strong well ripened roots near the temporary surface, which afterwards, by the process of filling up the hole, become deep soil roots, and give the vine a vigor and permanency, not to be acquired in any other way, so rapidly and so easily. In the autumn, before the heavy frosts, these holes are to be filled with the earth which has been reserved in a little heap by each, and the surface rounded so as not to retain rains or surface water, but protect the roots, and keep them in good healthy condition, free from the injurious effects of freezing and thawing during the winter.

The treatment of these vines, during the first season, is as follows. Taking it for granted that they have been pruned, or cut back to the third or fourth bud from the root the fall previous, as directed on page 56 the object, the first season, will be to produce a single cane of strong healthy growth. The three buds left upon the vine, if uninjured, will each shoot forth with the warm air and influence of spring. When they have grown from one half to one inch in length, select the strongest one, and rub or break out the other ones.

Keep this single shoot, which should grow very rapidly, tied up straight, so that it will never bend down, and give it constant attention during the growing season.

An hour or more spent in the vineyard every morning, will keep every vine in its place, beget a habit of neatness, and a love for this generous gift of Providence, which will grow stronger with age, and delight more and more as it progresses. The careful vine-grower, with a quantity of ties strung through a button-hole or secured by his belt, cut to proper length, ready for use, glides carefully and rapidly through his well tendered grounds, with his quick eye noting every change from one day to another, and his careful hand helping any aspiring shoot in its upward ascent. By and by the laterals, or small side branches, will shoot from the union of the leaves, with the upright shoot, and as these are but so many robbers, they must all be nipped by pinching the end, after they have made one leaf. After once nipping they will start again, and having made another leaf, must be pinched again, in order that all the strength may go to form the straight upright shoot or cane, which must be kept constantly and carefully tied up until the first of September, when its extremity may be also nipped to check its further growth, and the vine left to mature its wood, preparatory to its winter's rest.

After the leaves have fallen and the cold weather approaching, say in the latter part of October, or first of November, the vines may be prepared for winter, by carefully filling in the heap of earth which had been reserved by the side of each vine, as before directed, and gently rounding it

up, so that no water can stand or freeze around the vine, during the winter. There is nothing which will injure your vine so much as this freezing and thawing around your vine during the cold season; and a slight elevation to each vine will entirely prevent this, and give the young surface roots, which have formed during the summer, the requisite winter protection. Should any of the vines appear feeble, which will not likely be the case, if the former directions have been well carried out, a portion of this earth may be removed in the month of April following; but in most cases it will be better to leave it, only clearing the surface dressing the next spring, giving it a slight depression near the centre, so as to rather encourage the absorption of the summer rains. Yet this depression or hollow should be very slight, a superabundance of moisture being more injurious to young vines than too little wet, and most seasons giving a sufficient supply, without resorting to any artificial means, except careful and frequent working of the ground to retain it.

I have said nothing in this Article about mulching the surface of the ground, so much spoken of and insisted upon by many writers. In carefully prepared ground as herein directed, and particularly with the method of planting below the surface, it is not generally necessary, unless much dry weather should intervene; as the winds of spring, which so soon dry the surface of the exposed ground, will pass over these sunken plots, leaving them with their natural moisture uneevaporated, and the top always in good moist condition. Should, however, much drought come on with the summer, a slight mulch may be resorted to. As your sunken plot is

three feet square, this space may be covered to the depth of about three-fourths of an inch, with clean hay or well broken straw; but never with green grass, or any fermenting material. This hay or straw may be spread evenly and lightly, occasionally being removed to work the surface beneath it, and then replaced. Used in this way it will be beneficial in very dry seasons; but, as we have before said, during ordinary seasons, and in ground properly worked and planted, is unnecessary.

While preparing the vines for winter, during the season above mentioned, it will be best to prune them, which will consist simply in cutting back each cane to about the third bud of the season's growth; or, should it be very short jointed, and the cane be sufficiently stout, it may be cut at about two feet from the ground. The reason for this will be seen when we come to speak of training and pruning more in detail, and according to a regular system.

If one-year-old vines were planted, and the vine is yet slender, it must be grown another year to a single cane, and in that case can be cut back to two buds; but if the vines were of good thickness, and have made a vigorous growth, the proper distance or hight may now be determined for the arms, and the vine cut at about two feet from the ground, about one inch above the upper bud, as before directed.

This filling up the holes and pruning, with the proper inspection of the stakes and ties, and clearing away the rubbish, concludes the first year's operations in the young vineyard.

CHAPTER III.

MODE OF CULTURE AND TRAINING.

The operations of the second year will consist principally in keeping the ground free from weeds by the use of horse and hand hoe, and iron tooth harrow. Should weeds and grass spring up in great abundance, a light plowing may be resorted to; but not too near the young vines. If this is done, it must be done very cautiously, as the injury or breaking of a vine this year may be productive of considerable damage to its usefulness, and certainly will injure its symetry and beauty.

The tying up this year must be conducted with even more care and attention than that bestowed last year, as the growth will be more rapid, and the vines need closer watching. Preparation must also be made this year, and the foundation laid for the permanent form and training of the vine; about which there is a difference of taste in different individuals, and also a difference of opinion as to which is productive of best results. For our own part we prefer the arm system, which consists in the division of the head of the vine into two branches or arms, not far from the ground, which arms are secured upon a wire or strip running horizontally upon the

trellis posts, and produce fruit upon wood of the same season's growth, which wood springs from the bud or eye of the previous year, and is trained upright, and close to the trellis. This takes up but little room, and allows the freest circulation of air and light. This system we shall now endeavor, as clearly as possible, to describe.

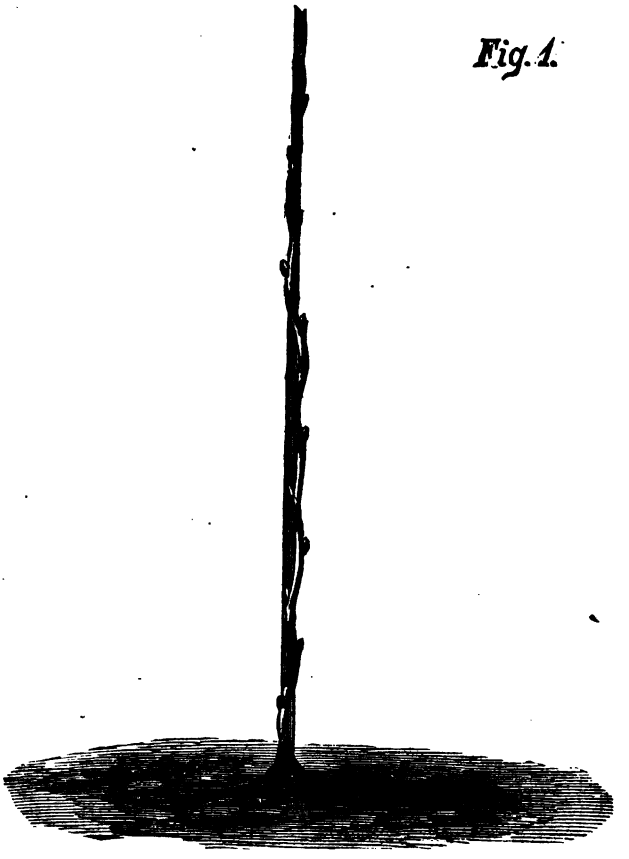
We have directed in the previous chapter the vine to be grown to a single upright cane, [Fig. 1]; and ordinary vines of one year old ought to make a growth of four or five feet, the first season: yet many do not do as well as this, and many make a growth of only, perhaps, two feet, and yet turn out good vines: so the planter must not be discouraged, even if his vines do grow but little the first year, provided they look healthy.

If the vine should be of very feeble, or even morderate growth, it will be best, at the trimming season, to cut it back to about an inch of the second eye of the last year's growth. Have a keen knife, and, steadying the vine with your left hand, so as not to disturb its roots, make a clean, quick cut with your right, being careful that the slope of your cut is not in such a direction as to throw the water on the next bud; that is, the top of the slope should be on the same side as the bud, and the bottom of the slope on the side opposite to the bud.

Your vine must now be treated exactly as it was the first season, growing a strong, single upright cane, which must be carefully tied up, and treated precisely as before directed; and pruned in this autumn of the second year precisely as next directed.

Fig. 1.

Fig. 1.



Indeed, it is very rare that one year old vines are in a proper state to prepare to take their arms the next year after planting. It is only those of extra vigorous growth, and vines which were two years old when planted, that are generally stout enough to prepare for this process the second season.

Supposing, then, that your canes in the autumn are strong and healthy, at least 3-8th of an inch in diameter; you cut them back to about an inch above the third bud of last season's growth, observing the same direction as to the slope of the cut as before, endeavoring to have this bud about two feet from the ground, or if it is not, trimming to two buds as near that distance as you can get them, and the spring following, allowing two shoots to grow from two buds, rubbing out the rest, and keeping these shoots carefully tied up as before, [see Fig. 2.] You may use this season, the same stake as before, only nailing on it two lath, or other stuff, steadied by a cross piece at the top, as shown in Fig. 2, and your cane tied to those as before. Pinch in your laterals as directed for the first season, and should your vines reach the tops of the lath or stakes before the end of the growing season, it will be easy to tack on an additional piece to give them greater height. Many contrivances may be arranged to give the vines temporary support; where the materials have to be purchased, lath are about as good and cheap as anything, or the farm may furnish the material in the shape of willow or other twigs, or split hemlock, or oak, or chestnut. A person with a little exercise of ingenuity, can easily keep his vines in proper order

Fig. 2.

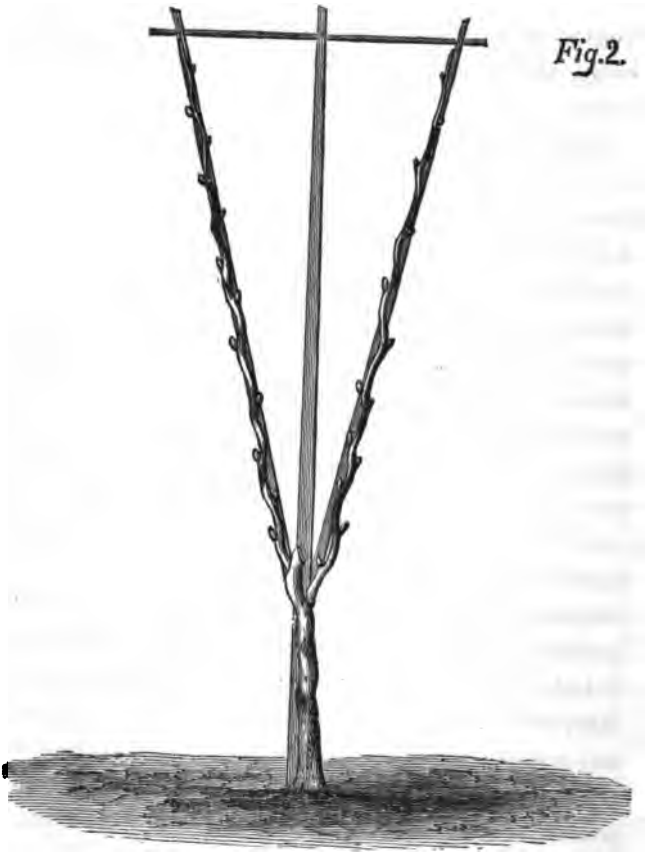


Fig.2.

until they are of sufficient developement to warrant and require the setting of permanant posts and trellis.

These canes being carefully grown and laterals pinched in during the summer, at the autumn pruning, are to be cut to within two or three feet of the main stock—see dotted lines [Fig. 2,] and then secured to their temporary support for the winter.

The following spring the vine will require a permanent support, in the shape of a trellis, of which there are various kinds. The one longest in use is made by setting posts, chestnut, or cedar, or locust, from 8 to 9 feet long, firmly in the ground, one post equi-distant, or in the centre between each of the vines. Thus, the vines being ten feet apart, will make the first post five feet outside of the first vine, the next post between the first and second vines, ten feet from the first post, and so on to the end of the row. The old way was to stretch wires on these posts, the first wire about two feet from the ground, another wire at the top of the posts, and a wire equi-distant from the top and bottom wire. This makes a servicable trellis under the old system of training; but we think a much better one is made by nailing a horizontal strip of wood two feet from the ground, on these posts, and another like strip, at the top of the posts. These strips are connected by other strips of wood, upright like a picket fence, to correspond with the shoots from the vines, which are fastened to the lower strip as hereafter directed; or wires may be used in the place of strips, which is probably better still; to which the upright shoots may be tied as they grow, as shown in Figs. 4 and 5. This is one of the neatest and

cheapest trellises that can be made, the wire being small, and the strips of spruce, or hemlock, or any other cheap material. Vines tied to these trellises are firm, and not liable to slip, or to be swayed or broken by the wind, and the trellis-posts are not likely to get out of place, being made firm by the strips.

The best time to build the trellis is early in the spring, as soon as the ground can be worked, when your buds are dormant, and not likely to be rubbed by handling the vines. Untie your vines from the stakes, lay them carefully out of the way, and then set your posts, and put on your strips or wires. The posts may have the foot charred, or coated with tar; or Kyanised by soaking in a chemical solution; or wet with oil of vitriol. Either process will add to their durability; but we much prefer the taring or charing to any other process. Good sound posts will last a long while without any preparation; but some of these processes may be resorted to, where the greatest permanency is desirable.

Having set your posts, and nailed on your bottom strips, tie up your vines loosely and lightly to the rail, or strip, and leave them in this position till about the first week in May, when they should be bent in the position described in Fig. 8, and firmly tied with strong, but soft twine, so as to keep them in their place. Bend them carefully, and be sure not to break or rub out any buds in doing so. They will crack and snap a little in the bending; but you will soon get such experience that you will not mind this, as, at this season to which we have advised you to leave them before bending,

Fig. 3.

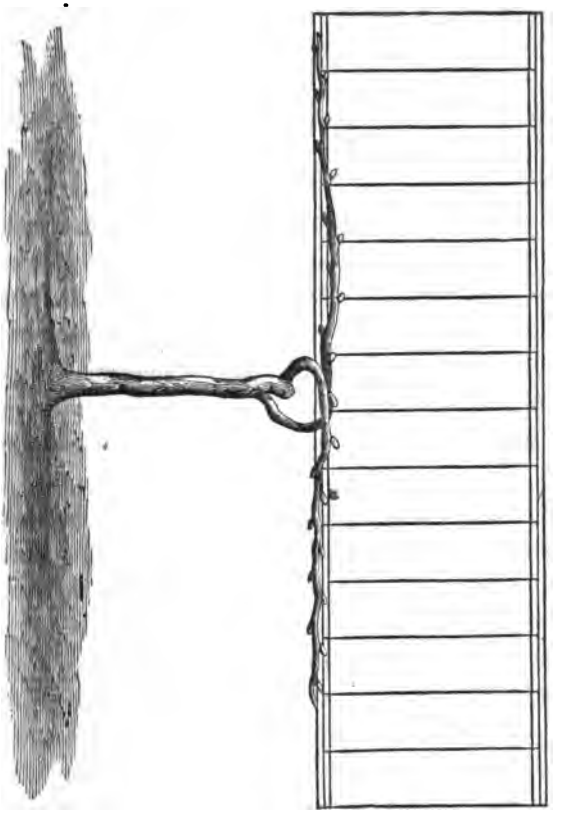


Fig. 3.

the sap is in the cane, and it will bend almost like whalebone.

Having bent and secured them to the bottom rail, you may proceed to affix a wire or slat to each shoot, or rather bud, where a shoot is to be, as shown in Fig. 3.

We have directed the arms to be bent crosswise; that is, each arm to be bent to the opposite side from which it grew. The object in this is to retard the flow, or rush of the sap to the extremities, and strengthen the buds, near the trunk or centre. We believe that this has a beneficial effect, in producing strong, healthy shoots near the centre of the vine, and thus tending to equalize the vine; as, in ordinary cases, the shoots which spring from the buds nearest the end of the arm, are the strongest. We also like the appearance of vines thus trained, the best, and there is no danger of their splitting; so that, upon the whole, we think crossing them is preferable.

They may be bent straight, however; that is, each shoot bent down on the side on which it grew; making a straight head in the form of a T—and many vines are trained in this manner.

Having tied the arms down to the lower strip, the wires or slats may be affixed as above directed; being careful not to get them too close to each other. Should the buds on your arms be less than six inches apart, which they will be, on the Delaware and other short jointed varieties, you must not allow more than every other one to grow, and produce a shoot, rubbing out the extra buds, and managing them so as to have your shoots, or upright canes, at least six inches

apart; and eight or ten, or even twelve inches will be still better, so as to give plenty of room, as your vine increases in age and growth.

As these shoots grow, they must be kept tied up to the upright wires or slats, as you have practiced in former years, and the strong laterals pinched in as before, only you need not be quite so particular to keep them close.

You will probably get your first specimens of fruit from these upright shoots this season; and you must steadily resist the temptation to let them overbear. Upon no account allow more than one bunch to each shoot, and this will be a heavy crop for so young a vine. But if your vines are healthy, and have been treated exactly as before directed, they may produce thus much this season, uninjured. But if you have any doubts as to this, then with an unsparing hand, no matter what your friends may say, thin them out, and pull off the bunches, so as to leave but about half the quantity above specified. These shoots may grow as in Fig. 4, to the top of the trellis, when they should be stopped on the approach of autumn.

You will observe, by looking at the end shoots on Fig. 4, that they are not trained up straight like the others, but carried off in a sloping direction. These end shoots are to form the extension of the arms, and, at the autumnal pruning, are to be cut back to one or two feet, as the case may be; and, in the following spring, tied down horizontally, so as to form a direct extension of the arms; and shoots are to be trained up from their buds, exactly as directed for the training of shoots from the arms of last year.

Fig. 4.

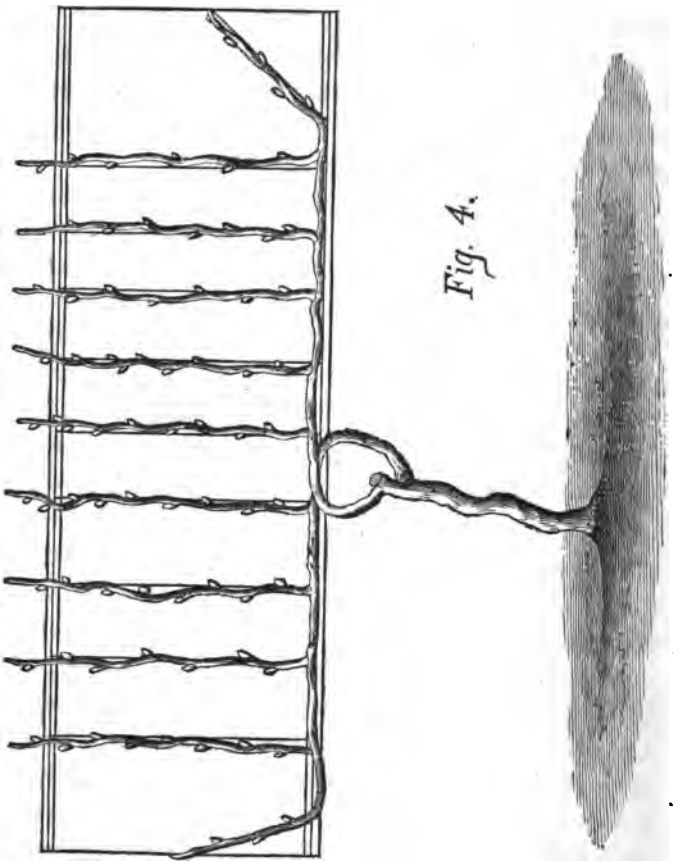


Fig. 4.

In the latter part of June of this year, as you may on vines of any age, you should go over your vines, and with a sharp knife, cut away any projection which may exist, where the new wood joins the old, or where one growth joins another, so as to make every thing smooth and clean. One of these projections will be found at the end of each arm, where the shoot springs from the arm, and another, if it has not been smoothed before, where the arm joins the upright stock.

This is a good time of the year, also, to perform any minor operation of pruning, which may have been overlooked in the regular pruning, as the wood at this season heals rapidly, and the vine may be cut in any shape you may choose, provided you do not take off any amount of foliage, which would be injurious.

Your vineyard may now be considered as established, and as brought to a state where it will begin to give you some return for previous labor and care. You will by this time sufficiently understand and appreciate your vines, if you have not been familiar with them before, to watch them carefully, to guard against insects, to take off superfluous shoots, and to keep every thing neat, and trim, and thrifty. Do not allow much tramping on the ground in your vineyard, but keep your ground light, and the surface loose and free from weeds and grass: and, if any extra fertilization seems necessary, give a light top-dressing of well-rotted manure, or bone-dust, or ashes, or a compost made of all these together, annually, in the fall or early spring, but not during the growing season.

Your pruning next year will consist in cutting all the

shoots of last year's growth, except the end shoots, which are to form the extension of the arms, as before directed, back to the second bud, unless some one should be very weak; and then it is to be cut to the first bud. The vine pruned, and the arms ready to be tied down, as shown in Fig. 5.

This cutting back is to be repeated on each succeeding year, by cutting back the last year's growth to the first or second bud. Should you wish more canes, which you may have after the second pruning, you may allow two shoots to grow on these spurs on the arms; thus producing more fruit, and giving your vines more leaf surface. You will also keep extending your arms as before, until your vine fills all the space allotted to it; that is, until it reaches the post, or next vine, when the arm may be cut square, and no more extensions be made, but the end shoot trained straight up like the others. Should a cane at any time be unfruitful, or weak, or be injured by accident, or otherwise, it may be cut clean out, and dormant buds allowed to start, the most vigorous of which may be trained to form a new cane, and the others rubbed out.

The full vine, with its arms completed, and its double shoots, is shown in Fig. 6, which is drawn on a scale of half an inch to the foot.

We have never seen a system of training the vine better than this; nor have we ever seen a system but was liable to some objection, in some particular case: the objection to this being, that, in strong growing vines, there is not sufficient room, or vent as it were, for the vine to extend itself, under

Fig. 5.

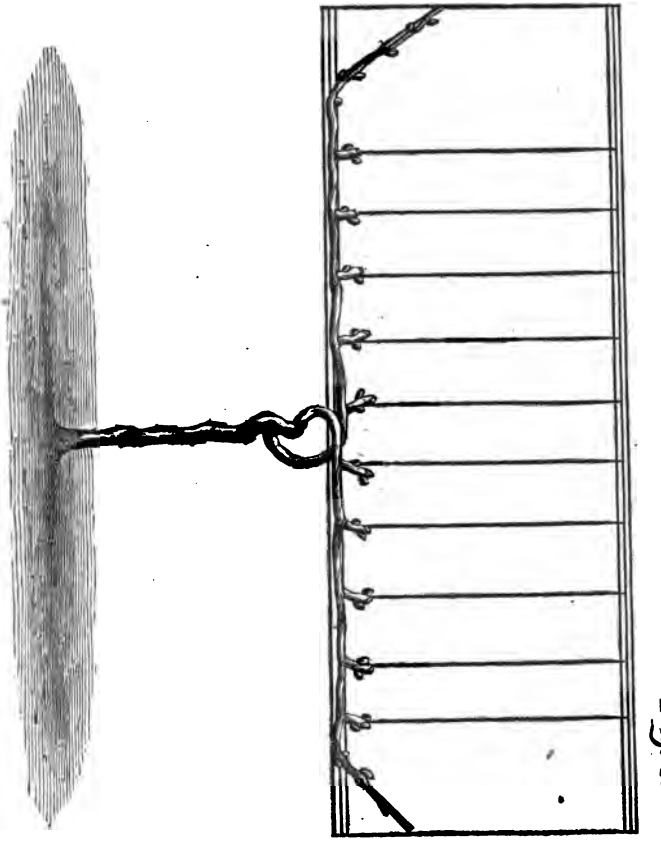


Fig. 5.

the influence of our climate. To remedy this, as the vines increase in age, the two centre shoots or canes—that is, the ones nearest the trunk, marked *a* and *b*, in Fig. 6, may be allowed to grow upright to the top of the trellis, and extend themselves *ad libitum*, so as to present a feature which may appropriately be termed a safety-valve.

We believe, having gone thus far carefully, in describing our system of training, that any person not before familiar with the vine, will, if interested in, and loving its culture, be enabled to take it safely and profitably from its earliest stages to its full developement, when it becomes what it was undoubtedly designed to be, one of the best gifts of a bountiful Providence, and one that will amply repay all care and labor, and give back, tenfold, in its refreshing and grateful fruit, all the outlay of its owner.

We shall now proceed to describe other systems of training which are commonly practiced throughout the country, so that the intelligent culturist may judge of their different merits, and make choice of such as, in his judgment, may be the best.

There are also plans for training adapted to wall and arbour culture, which may be applied to advantage wherever opportunity offers, or a favored nook is found around the homestead, where a choice specimen vine may be cultivated, and often the best fruit produced. The careful husbandman will allow no such spot to escape him, and lie idle, but will plant a choice Union Village, or Anna, or Herbemont, or Rebecca, where it can have the necessary protection, and delight with his family in its beautiful foliage, as beautiful as

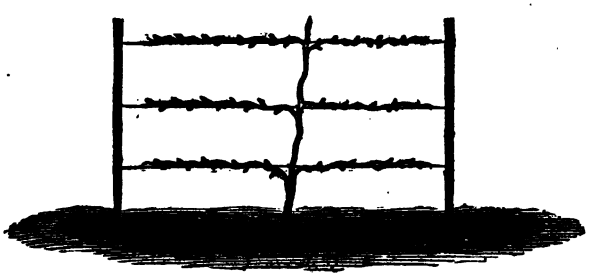
Fig. 6.

that of any ornamental vine which could be cultivated, and its fragrant and refreshing fruit. In this way associations are induced, and attachments to the old home formed, which are not only a source of present happiness, but exert a moral and social influence, which may extend itself by our children and our children's children, through many generations.

CHAPTER IV.

OTHER SYSTEMS OF TRAINING.

There are two systems of training very similar to each other, which are much in use for vineyard culture. The first is the one first spoken of in the beginning of the directions for putting up a trellis, and is trained upon the three wires, there mentioned. The posts are set any distance not less than 16 feet apart, and a wire stretched from one to two feet from the earth, for the bottom wire. Another wire is stretched at the top of the posts, and one in the middle between the two wires. The vines are grown straight and upright, being cut back, as before directed, until a strong single cane is produced. Arms are then taken as they are grown, three on each side, making an arm for each wire on each side of the vine, as shown below:

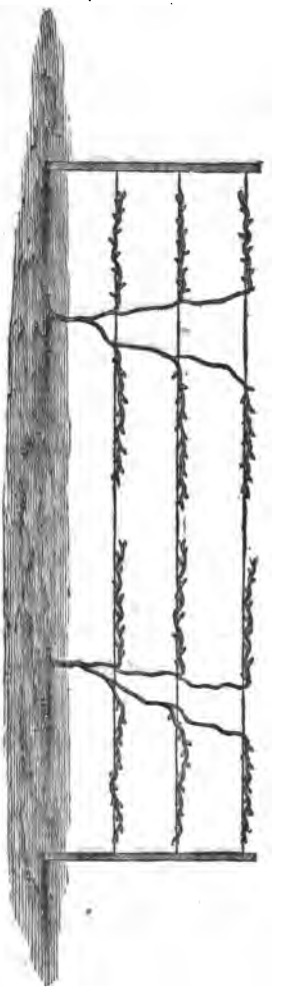


These arms are renewed from time to time, as required, by cutting out the old ones, and bending a new shoot in their places; and the fruit is produced from the wood springing from the eyes or buds on the arms; the bearing wood being of course, of the present year's growth.

This system is much in use upon the Hudson, and throughout the country, generally, and by it many thousand pounds of good grapes are annually produced. But it has many defects, one of which we should think would be the difficulty of keeping the lower arm in good bearing condition, and the constant necessity of renewal: all renewal systems being devised to remedy some defect. But it is easy to bring a vine into this shape, and requires but little judgment to trim a vine of this kind; and this, perhaps, is one of its chief recommendations.

As we have said before, good grapes can be grown upon almost any system of training; but the constant tendency of the vine is upward, and the horizontal arm system is, as far as we have known, the best calculated to counteract this tendency, and to keep the vine in full and regular productiveness.

There is another plan practiced, we believe, at Croton Point, with Catawba and Isabella vines, which is a modification of the above, and perhaps superior to it. It consists in growing two permanent upright canes, which are trained on three wires, stretched on posts about twenty feet apart—two vines ten feet apart, between each post. Arms are trained each way from the outside of these upright canes, an arm on each wire, and the arms renewed every year, if necessary. The fruit is produced from these canes, and the shoots allow-



ed to grow as long as they will. This system, we should think, involved too much space between the rows, and also a renewal of arms; and is liable to the same objections as the preceding.

There is another system for an arbour, perhaps the best that can be devised for that purpose, which is a sort of spur and renewal system, and consists in forming regular horizontal arms, as in the first system, on the bottom bar or rail of the arbour, a short distance from the ground, and then training canes from the eyes, on these arms, up over the arbour, at regular distances of about one foot apart, and extending these canes, by regular additions of wood, from the ends, from year to year, until they reach as far over as desired.

The side shoots which spring from the eyes on these are then to be spurred, and kept close, so as to produce a regular bunch of new shoots from each eye, every year. The fruit is produced on these bunches of green shoots in abundance, and the whole appearance of the arbour, covered in this way, is very beautiful, and the shade every thing that can be desired.

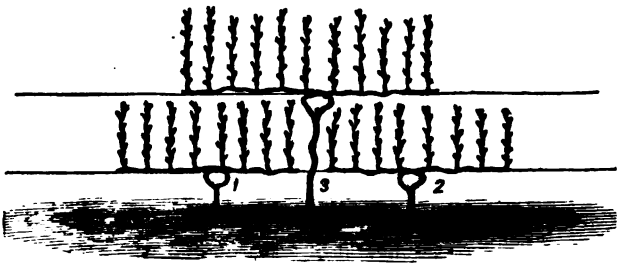
But these canes will need renewing from time to time, and then a cane must be cut out, down by the arm, and another new one trained up in its place. Kept in this way, the vine will produce fruit for a long time, and, by skillful management, becomes very productive.

This system may also be carried out on a high trellis; carrying the canes to the top of the trellis, and spurring upon them as upon the arbour; but it is not as satisfactory for the trellis as the regular horizontal arm system.

This horizontal arm system may be used to much advantage, by placing one tier upon another, wherever a brick or other wall, or a high fence, or the side of a house, offers a fit place and opportunity for a THORMERY SYSTEM. This system, so much used abroad, and so much written about here, is, in its simplest modification, as follows:

Suppose you have a wall, or side of a house, which you wish to cover to the height of ten feet, and which is sixteen feet, or more, long. Begin by setting a vine four feet from each end, which will leave eight feet between these vines. Now set another vine in the centre; so that you will have, in a space of eight feet, three vines, four feet apart. Cut back vines No. 1 and 2 to two feet from the ground, and vine No. 3 to six feet from the ground. Take arms from No. 1 and 2 at two feet, and train them on the horizontal wire two feet from the ground, and stop these arms when they reach the vine No. 3, in the centre, and the end of your space, four feet from the trunk, at each end. Train arms from vine 3 on horizontal wire, six feet from the ground, and stop them at four feet from trunk, on each side. You will thus have a double course, which can be multiplied and extended indefinitely, as your space will allow; and the same rules followed as in the single horizontal arm system, before minutely described. The cut [see next page] exhibits this system in its simplist form; and it is purposely drawn with only three vines, in order to make it less complicated, and more easily understood.

This system may be multiplied indefinitely, to any length, and carried to several courses in height, by setting more



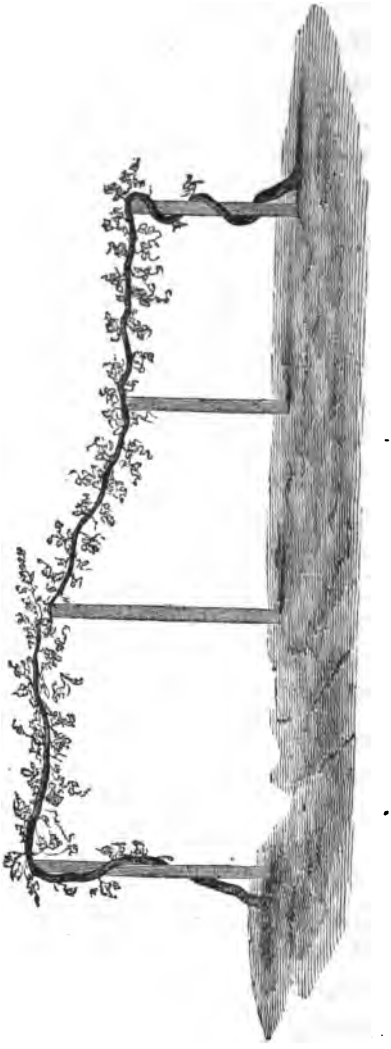
vines, and varying the distance. The ground, of course, must be well prepared, in order to accommodate several vines in a short space. The vines should not be trained directly against the wall, but a few inches from it, so as to allow of circulation of air behind the vines. Blocks may be affixed at proper distances, and slats or wires nailed upon them; or if on brick or stone work, an iron spike may be made by a blacksmith, and driven into the joints. This spike should be about six inches long, with a hole in the larger end to receive a wire. It may be driven into the brick-work two inches; leaving four inches space between the wire and the wall. A few of these, about eight feet apart, upon a course, and a suitable wire drawn through them, will furnish a cheap and economical support; and by this means a good crop of grapes may be secured from a spot which would otherwise produce nothing.

We have no desire, in a work of this kind, to multiply systems: but there is another mode of training which is often adopted for yards and gardens, by which the finest fruit is sometimes produced. The finest clusters of Isabella grapes are grown on this system, and it may also be adopted

for any kind of open air grape. It is similar to one used in the south of Europe, and which, from its form and manner, we believe has been styled by some travellers, the CLOTHES-LINE System.

The vines are carried by a single stem to the top of a post seven or eight feet high, and then run off on a single wire to another post, or to the corner of a building, or the top of a tree, or any other object which affords suitable support. This is, of course, the work of time; the vine being extended from year to year, by the same means as the arms are extended, before described; and the annual pruning consisting simply in cutting off all the growth which springs from the single stem (except the extension,) close to the stem. The fruit is produced by the short branches which spring from these single canes. These shoots are annually cut close, and new ones grow out in their places. We give (on the next page,) an illustration of training, on this plan, over a number of posts and a gateway.

This plan seems liable to the general objection, of the lower parts of the vine failing, in time, to produce fruit; but it does not seem to be so, practically, to any extent. The advocates of this system are loud in their praise of it, and claim for their fruit a superior size and excellence. If necessary to renew, it can easily be renewed, by cutting back the old cane, and growing a new one, the same as renewing any other cane in any other system. We would not, however, recommend this system, except when circumstances of location and grounds favor its use; as it can be used in some places where no other system could. We should not think that



vines could flourish under it to advantage, for any number of years.

We have now shown a sufficient number of kinds of training, to enable the intelligent cultivator to choose from general principles, such a system as shall suit his particular circumstances: and also to give him such a knowledge of the habits and wants of the vine, as will enable him to adapt it either to his field or garden, or village or city yard; and having done this, believe that any one can manage and train a vine, so as to make it, under any circumstances, produce a healthful and profitable return.

There are some plans which we have not spoken of, such as the "Ohio Bow System," the "Short Spur and Renewal System," and others, which are easily understood, should it be thought best to use them. But, as we have said before, we believe from those already shown, that some one can be selected which will give entire satisfaction, and that a close study of these will give sufficient knowledge of the general principles which govern it, and therefore dismiss the subject for the present.

CHAPTER V.

HOW TO PROCURE, PREPARE AND PRESERVE VINES FOR PLANTING.

THERE are some important items to be attended to in the selection and purchase of vines, without a knowledge of which much time may be lost, and useless trouble and expence and vexation incurred. Vines have been multiplied so fast of late years, and pressed upon the market so rapidly and pertinaciously, that many persons, after nursing vines for which they have paid a fair price, or a price which should entitle them to good vines, have found their purchases worthless, not only as to quality, but as to name, and their time and labor lost.

Above all things, then, never purchase cheap vines, nor of a person who professes to sell extra vines at a cheap rate, nor on any account must you purchase a vine over three years old, unless it has been grown in some way that it can be moved without disturbing its roots. A vine which has been moved after it has attained any age, hardly ever grows good fruit, or fruit in any quantity. If you have an old vine in your grounds, prize it beyond all price, for it is more valuable every year it stands; but valuable only in its own home.

Therefore you need not covet your neighbor's vines, for they would be worth but very little without his land also.

We would, therefore, advise you to follow exactly the plan recommended in the directions for planting. Make up your mind, through the warm and luxurious days of summer, what vines you will plant, and how many, and of what age. Early in September, send your order to some good, reliable nursery-man—some one whom you know understands his business, and has some regard for his word, and has business enough to live by, and honesty enough to live by, without resorting to petty tricks to sustain his business. Specify, in your order what quality of vines you want; and if you have any doubts as to his mode of graduating them, specify them by price; as, so many Delawares at 50 cents, or at $1,00, as the case may be; trusting him to send you as good vines as he can for that price.

For our own part, we do not believe that a good Delaware can be grown, except in very large quantity, for less than half a dollar. We have known persons who boasted that they had purchased good sized Delawares at a very low rate, and come to examine them, lo! they were *grafted*, and dear, at any price. We believe, for good results, a first-class Delaware, single eye, two years old, well grown, and which should cost, in ordinary cases, about $1,00, will give good satisfaction, and make a strong and healthy, and productive vine. A younger and smaller vine, at half the price, may be equally good, provided you can wait for it; and a larger, at double or more price, will give returns sooner, but perhaps make no better vine. You will therefore see, that a vine

costs exactly in proportion to the time and labor expended upon it, and make your decision whether you are willing to pay another for this time and labor, or expend it yourself; and as you decide, so will be the price of your vines.

Having, therefore, sent or given your order to some reliable man of a reliable nursery, prepare, some time before you may expect them, for their resting-place for the winter. Select a spot where there can, by no possibility, be any more water than will fall upon it, and where all that falls will speedily run off. If it is a sandy place, so much the better: if not, and you wish to be particular, you had better cart upon it a load or two of fine, clean sand, not gravel, and save it to put around the roots of your vines.

When your vines arrive, dig a trench large enough to hold them all, set with their canes three or four inches apart; then, having your trench all ready, and for ordinary vines about eight (8) inches deep; take each vine from the packing box, separately, on a moist day, (or at evening is preferable,) and cut off its top, to the third or fourth bud, and cut off its roots, about one third their length from the extremities, leaving about two-thirds of the root upon the cane, and pack it immediately in the sandy earth, at the bottom of the trench, covering it with your hand, spreading out its roots, and filling sand between them, so that no one root shall touch the others; and performing all the operations as carefully as directed for final setting out. Cover its roots about one inch in depth, and taking another vine, trim it and set it out in the same way, as close to, and partially above the other, as you can, and have earth between them: and proceed until your

vines are all placed in the trench. Then fill in your earth, and raise a neat mound over them, so that all the water will run off, and every part of your vine, except, perhaps, the top of the cane, shall be at least six or eight inches under the surface—more will not hurt the roots—and the top of the cane should be four or five inches under. Finish this mound neat and smooth, using a rake, if necessary: and if you have any doubts, after this, of its shedding water, dig a trench a short distance from and around it, arranged so as to carry off any surface water which would be likely to remain.

Your vines are now safe for the winter, and you need give yourself no uneasiness about them, whatever the weather may be. They are under your control, and ready for planting, and you will not have to wait for them in the spring.

As soon as the hard frosts are passed, uncover the tops, or canes of your vines; but do not disturb the roots, nor open your trench proper, until you are ready to plant. If, after uncovering your canes severe weather should come on, you can throw a carpet or canvass over them, which will protect them; being careful, in so doing, not to break the canes, or injure the buds.

We purchased, last autumn, of Mr. Z. R. Hinkley, of New York, from Dr. Grant, at Iona Island, quite a lot of vines, of Delaware, Diana, Union Village, Allen's Hibrid, &c. and heeled them in, in the manner above described. It was a damp, open winter, constantly freezing and thawing, and wet, and we had considerable anxiety as to the well-being of the vines. Several times we were tempted to open them, and

see if they were disposed to mould or rot; but concluded to run the risk, and let them remain where they were. Such a winter has scarcely ever occurred in this latitude, and yet, on planting out in the spring, all were found in first-rate condition, and have all, we believe, particularly the two-year-old ones, made a good growth. Some now stand on our own grounds, being very strong and healthy, and luxuriant in foliage and cane, and still growing. We recived from the same source several vines in the spring, which, though good vines, started later than those heeled in: and though unpacked and put out by careful hands, many buds were rubbed, which we would rather not have lost. Our vines of both spring and autumn have done well: but from this and other experience, we say unhesitatingly, purchase vines in the autumn, and keep them through the winter.

We also believe that the action of frost upon ground prepared as before directed, is of the most beneficial nature—blending and molifying the different parts, and performing that delicate process of comminution, which can be performed so much better by nature than by art, and which the process before described, of preparing in the fall, and allowing to stand through the winter, is, in our opinion, well calculated to accomplish. We therefore again say, by all means purchase your vines, and prepare your ground in the autumn—but plant in the spring.

We have now carefully followed the various processes of preparing the ground, selecting and purchasing vines, keep-

ing them through the winter, planting, trimming, training, and after treatment, and have only a few hints to make as to some matters connected with the culture, which we consider it important that every vine-grower should be acquainted with.

CHAPTER VI.

PROTECTION FROM DROUGHT—INSECT ENEMIES; HOW TO TREAT THEM, AND TO PREPARE FOR WINTER.

We regard the system of planting beneath the surface of the ground, as well calculated to guard against the effects of drought, which often comes on very suddenly, in May and June, owing to the rapid evaporation of the moisture from the surface of the earth, caused by the increasing heat of the sun, the prevalence of strong winds, and many other causes. A surface up to the level of the surrounding earth, no matter how well prepared, soon feels the effect of this, and the vine is not forwarded during these two growing months, as it should be. But if the surface of the hole in which your vine is planted is six or eight inches lower than the surrounding surface, it is not swept over by the winds; and being well worked, and its soil made fine and deep, it always attracts whatever moisture there may be in the earth or the air, and maintains every thing in its proper proportion. If great drought should come on in the early part of the season, a slight mulch of hay, or clean straw will make your vine and its surroundings every thing that can be desired, to resist the drought; and in extreme cases, a half pail of rain, or river, or

brook water, applied through a fine rose watering-pot, in the evening, will keep it in freshness and vigor. Never use soap suds or slops to a newly planted vine; and if you must use well or spring water, have it drawn in the morning, and stand in the sun, and apply it in the evening.

We regard watering, as a general thing, scarcely, if ever, necessary, in vineyard culture, and would depend more upon thoroughly preparing the ground, and working it after it is prepared. Yet you may have a few favorite vines, the south side of a building or a fence, or in some situation where they may be exposed to extra heat, and feel more than ordinarily the effects of dryness. These it may be necessary to nurse a little, and a little water applied as above, once a week, will keep them growing, and in health and vigor.

When you have but a few vines to attend to, you may also find it of service, in planting out, to give them a little protection early in the season. This may be afforded by a box without top or bottom, set over, or rather around the vine; or the half of a keg, or a large flower-pot, with the bottom knocked out, or by three boards about a foot or fifteen inches long, nailed together so as to give protection east, west and north, and open to the south.

All these things help to forward your vines, and the quicker the vine can be made to grow, without using heating artificial stimulants, in the way of manure, the better and more permanent it will be in its results.

There are also certain enemies of the vine which are to be combatted, and certain injurious consequences to be guarded against; insects to be watched, and bunches of fruit to be

trimmed, and grown in good shape—and a general care and supervision to be exercised in proportion as the owner loves the vine, and is interested in its prosperity.

Mildew sometimes attacks the vine, and is an appearance of mouldiness upon the growth and the fruit. We suppose it follows a check in the growth, caused by any atmospheric change which would produce this effect. It is sometimes accompanied by the appearance of numbers of a small *aphis*, or plant louse, that sucks the diseased juices. It is more common on some varieties than others. The Hartford Prolific, Concord, and Delaware being, as a general thing, but little affected by it, and the Delaware almost entirely free from it. The best remedy is, perhaps, dusting the vines with flour sulphur. Plaster of Paris is also said to be good, as well as syringing with a solution of nitre in water, or lime-water, or soap-suds: but the main remedy, and perhaps the most effectual, is sulphur.

Rot sometimes affects the berries in particular seasons; as also leaf-scald, and various other minor affections: the best remedy for which is a thorough and careful cultivation.

There are also insects to be watched, which injure either the plant or the fruit, and are to be carefully guarded against and destroyed, as they appear. The most formidable of these thus far, is the rose-bug (Macrodactylus Subspinosa,) which is a small, yellowish brown insect, of the beetle tribe, with a pair of gauze wings, protected by a hard covering, and strong, harsh feet, which seem as if they had claws, when they touch the skin. They generally make their appearance when the grape is in blossom, and feed upon the young blossom; thus

destroying the fruit. In some places, however, they are so numerous, that they do not confine themselves to the grape and rose, but attack other fruits, particularly the cherry, which they devour, fruit, leaves, and all. The female, after a few weeks, crawls into the ground and deposits her eggs, which are whitish, and hardly as large as a grain of mustard seed. These soon hatch, and the young grow until attaining their full size. At the approach of autumn they descend into the ground below the reach of the frost, where they pass the winter in a torpid state. In the spring, having gone through some changes, they come back to the surface, and are ready in their accustomed time, for their regular work.

There have been many plans devised for getting rid of these troublesome pests: but as yet they are by far the most formidable enemy, in some sections, which the grape-grower has to contend with. Sifting air-slacked lime over the leaves, or plaster, or sulphur, has been recommended—as, also, syringing with whale oil—soap-suds, or water impregnated with some strong smelling substance, as Naptha, or spirits of turpentine, or kreosote, might make the vines disagreeable to them. But all these plans are far inferior to catching and killing them.

The rose-bug has this peculiarity, that when touched or jarred, he drops without flying, and he is utterly helpless in water. If, therefore, you take a basin of water you can soon go over your vines, giving each shoot upon which the bugs are resting a jar, and holding your basin under. The labor of this is not half as great as it would seem to be, and there is nothing as sure. After having finished your work, you

may pour off the cold water, and replace it by hot; or you may pour off the water, and then throw the bugs on the ground, and crush them with your foot. If the whole community would unite in killing rose-bugs we should soon be rid of them. A plan has been devised to accomplish this, at little cost of labor. There are some plants which bloom at the right season, of which they are particularly fond. Of these the common elder is one; but it is of itself too great a pest to plant in our fields. The *spirea sorbifolia*, or Venitian sumach, as it is sometimes called, bears a long conical cluster of white flowers, the whole in shape like the bunch of berries of the common sumach, and resembling them very much at a little distance, except in color. Of these flowers the rose-bugs are more fond than scarcely any thing else; and the experiment has been tried, successfully, on a small scale, in gardens, &c. the grape being almost free from the rose-bugs, and the flowers of the spirea loaded. Going over these flowers, a large quantity of them can be at once thrown into the water by a tap, and a system of wholesale slaughter carried out, with very little time and trouble. The spirea is easily planted, and it would be well to try it, where the rose-bugs are troublesome.

This catching of rose-bugs should be made a regular business of, in its season, and the vines carefully watched and gone over several times a day. In this way they may be generally kept under, and the fruit saved; but in some sections they have made their appearance in such swarms, as almost to defy resistance.

There is another little insect which may be found occasion-

ally, rolled up in a leaf at the end of a new shoot, eating it away, and checking the growth, if not stopped. A small, yellowish, white worm, less than half an inch long, and almost as active as an eel out of water. You must watch your vines, and when you see a terminal leaf drooping and curling, catch him and kill him.

There is also a worm, not in our experience common; but when it does attack the vine, makes rapid havoc. It is a round worm, like a caterpillar, about three quarters of an inch, or an inch long, with alternate yellow and black rings its entire length. It cuts and eats the leaf from the under side, and unless stopped, will quickly strip the young vine especially. They may be found, several of them together, on a single leaf, at their silent, but rapid work. They are a slow and sluggish animal, making no atempts to escape, and are easily caught and killed.

We have now enumerated the principal insects, but by no means all. The careful cultivator will be constantly on the watch, and whether he be scientifically inclined or not, will catch and kill any insects which he may find preying upon his vines, from the inevitable caterpillar to the small aphis. A steady perseverance will keep his grounds comparatively clear, and lessen his labor, as a general thing, from season to season: and the trouble of all this, after the first year or two, will be no objection, for his love for his vines will increase with the care bestowed upon them, and what at first was a task and a care, will soon become a healthful amusement and a pleasure.

Thinning the fruit is another means of keeping your vines

productive and healthy, which should never be overlooked or neglected. The greatest care should be exercised with young vines, especially, in order to prevent their overbearing. Never allow a vine to bear at all, the first, or same year, it is set out, (unless it has been moved in a box, without disturbing the roots,) and only moderately the second year. The consequences of too large a quantity being left upon the tree, are an inferior fruit, and often permanent injury to the vine. Even on old vines, the best grape-growers thin out the fruit after it sets, removing all inferior and imperfectly formed bunches, and destroying an amount of fruit, which is often three-quarters of the quantity upon the vine. Some insist on removing even a larger proportion than this, contending that there is nothing lost by it, the remaining quarter making up in size, flavor, weight and market value, for that which is removed.

The question is often asked, at what time shall we prune vines? We say any time after the fall of the leaf, which generally occurs after the first severe frost. Prune then, or leave it until January, or first part of February, if you prefer it; but we believe it best before the weather is too cold, as then it will probably be more thoroughly done, and not hurriedly, as it will be likely to be, when feet and fingers are aching in the keen air. Besides, vines should not be handled much when there is frost in them, as they are then brittle, and disposed to break: nor should they be pruned when there is danger of much bleeding. Should the trunks of the vines be covered with old and dead bark, remove it; and

should they be infested with insects, wash with soap-suds, or some mixture to destroy the insects and cleanse the bark.

In northern latitudes it has been found necessary to lay down the vines in the winter, in order to preserve them from the effects of the extreme cold, and the changes of temperature. This is seldom or never necessary in the neighborhood of New York City; but in localities farther north should always be resorted to, if you wish the best results. First prune your vines, and then loosing them from the trellis, carefully bend and lay them upon the ground—throw over a litter of leaves or straw, and cover with about six inches of earth. The operation is easily performed, the vine bending more readily, even, as it advances in age; and even in favorable locations, some kinds, as Herbemont, Catawba, Union Village, &c. pay well for it.

Persons living in high northern latitudes, in this way, though we would not advise them to engage largely in vineyard culture, yet may have a few vines under their care, which will give them fruit for the table, and enable them to develope and bring forward those varieties which we now have, and perhaps propagate from them particular varieties suited to their own particular latitude.

The Delaware, however, has proved itself, thus far, hardy as any, and capable of growing any where where a grape can grow; and we believe with this treatment will succeed far up in the coldest fruit-bearing countries.

CHAPTER VII.

HOW THE VINE IS PROPAGATED.

The propagation of the vine is a subject interesting to every true lover of Horticulture; and there are but few persons who are possessed of even one or two vines, and space to grow them, who will refrain from attempting to propagate them. Few, indeed, will succeed at first, in producing healthy vines; and there are but a few but will succeed, after practice in raising a certain proportion of those they put out.

Nature's method of propagation is by seeds, which involves, also, a renewal of the vital force, and the production of a new variety, or some variation of the old one, as it is rarely that a variety reproduces itself. All our new varieties are produced from seeds, and are new varieties as far as certain charcteristics are concerned; though, as a general rule, a seedling bears, in most respects, a strong resemblance to its parent.

Thus, a Catawba grape will produce a grape strongly resembling the Catawba; it may be better, but still resembling. So of the Isabella, whose seedlings are all strongly marked by the parent. You must, therefore, recollect, that in producing seedlings you may get one better than the original,

and you may, and probably will get a great many no better, or even worse.

In hybridising, however, the characteristics of two may be united. Thus, in Allen's hybrid with the Isabella, for hardihood and adaptedness to our climate, and the Chasselas, for flavor, a result has been produced which furnishes a grape blending the two. So in Rodger's hybrids, the large Fox-grape of the woods, for size and hardihood, and the fine foreign varieties for flavor and productiveness, are united in various combinations, to produce many grapes of new and striking peculiarities. This process is yet in its infancy, and we can scarcely foresee or imagine its results; but we believe that it will give us new and endless combinations, and, as in the strawberry, so in the grape, will lead us on in progressive excellence, the perfection of which it is impossible at present to estimate.

The process of raising from the seed is very simple. Select your seed from the finest and ripest grapes, those that have been ripe the longest being preferable, and either plant them at once in a well-prepared bed, and cover them with litter during the winter; or mix them in a flower-pot with sand, and bury pot and all in a dry place in the open air, to remain for the winter. Sow your seed in the spring, and shade a little, when they come up, from the hot mid-day sun, and select your shortest jointed, thriftiest plants for preservation.

In making hybrids you must first grow your grape. The grape is, in the blossom, capable of being fertilized, or crossed with other varieties, and, to insure this with certainty,

the blossoms you wish to raise your grapes from, must be protected from accidental fertilization, by the wind, bees, &c. carrying the pollen from other blossoms upon them; and at the proper time you take, with a camel's hair brush, the pollen from the blossoms you wish to cross with, and introduce it upon the blossoms you have covered—or, shake it over the blossoms and cover again, to guard against accidental fertilization. Keep covered until the fruit sets; then ripen your fruit, and proceed to sow the seed as before. Fruit may be expected from seedling vines in about four or five years.

Vines, however, of established kinds, are mostly propagated from layers, single eyes, and cuttings, either of which will produce the same fruit as the parent vine.

To propagate by layers you must have an established vine, of some age, and of good healthy condition. You may, if you wish to layer from it, trim it in such a way as to grow young canes from near the roots, or in any position where they may be readily bent to the ground. Early in spring, having first put your ground in good order, dig a trench five or six inches deep, and lay your cane in the bottom of this trench, leaving the end out of it, and pin it fast by crotched sticks, or in any way which will secure it. A piece of wire bent in the form of a hair-pin, large enough to embrace the cane, is a good fastener. Leave the trench open, and as the vine puts forth, your layered cane will shoot also, and these shoots may be gradually filled around with earth, as they grow, and the cane covered, until your trench is full. In the fall, or early next spring, sever the cane from the parent vine, and each shoot,

with a piece of the rooted layer fast to it, will be a vine, valuable, according to its size, and growth, and thriftiness.

Layers may also be rooted by bending a shoot of last year's growth into a large pot, or basket, or box, and leaving one end out, keep the earth moist, until rooted. These are easily moved, and will make good plants.

Plants may be raised from cuttings, by preparing a bed of good earth, rather sandy than otherwise, but which shall neither be dry nor wet: and, taking wood of last year's growth, cut it into lengths of two or three eyes—always cutting off near the lower eye. Insert these in this earth, compacting the earth moderately but evenly, at the bottom of each cutting. A good way is to dig a trench about deep enough to receive your cuttings, at such depth as to leave the uppermost eye about even with the surface. Set your cuttings in this trench as deep as above, press the earth well about the bottom of each, separately, and then fill and smooth off your trench even with the surface.

Cuttings are set in this way very rapidly, and if a little care is used, the work can be done very thoroughly. All grape cuttings should be selected at the annual pruning of the vines, and cut in proper length, and buried in a dry spot in the garden, out of the reach of frost, until spring. Or, they can be packed in the cellar, in sand, which must be kept just so moist (not wet) as to receive an impression from the hand, and not allowed to be frozen. All grape cuttings are benefitted by soaking in water, before setting—some a longer, some a shorter time, according to the hardness of the wood.

But we would advise every hortoculturist to have a propagating box, not for grapes only, but for other plants and shrubs. This may be made in the same way as a hot-bed, without the heat, by simply placing a frame or box without bottom, on a good light bed of earth, filling round the outside so as to throw off rain-water, and fitting on a moveable sash, with a cheap muslin shade to be used in the middle of the day, when the sun is hot. You must regulate this with care, both as to heat and moisture. As a general rule it will want water about once a week, which must be applied at evening, through a fine rose watering-pot. The water must be moderately warm, not as warm as milk, nor as cold as rain-water, but without any perceptible chill, and must be given in quantity according to the state of your bed. You must watch closely your cuttings, which may be inserted as above directed, for the open ground; but may be started earlier in the season.

If a cold night comes on, cover your box with carpet. In a very hot day shade it. As a general rule, all cuttings, whether in the box or in the open air, should be shaded from hot sun while starting, and until established. They may be hardened to sun and air gradually, and at length all covering removed, and the plants brought to the condition of open air plants.

But by far the most usual way of propagating, with nursery men, is by single eyes. This requires a considerable knowledge and skill, and also the proper appliances to carry it on satisfactorily; and but few will accomplish it so as to produce good plants, without the necessary glass structures,

and proper bottom heat. Yet you may do it all by having a good reliable hot-bed, with a mild, steady heat.

A single eye is a bud with about one inch or less of wood attached. Some split this wood retaining the half with the bud, others use it whole. Some set it upright, others horizontal. It should be placed in a pot, box, or pan filled with clean sand, the bud uppermost, and about half an inch below the surface. Some add a little charcoal to the sand, but sand will answer for all purposes, and this box or pot plunged in a bed, or place where it will have a steady, mild bottom heat, a little above the temperature of the atmosphere of the house or frame. If in a green-house, it is easier to regulate it all; but if in a hot-bed the glass must be shaded, and the proper humidity kept up, in order to promote the rooting or striking of the plant, as it is called. The bud will soon shoot, and in the Delaware and some other kinds, will grow to considerable length, without any roots having put forth. These shoots and leaves must be carefully guarded from a hot sun, which, at this stage, would kill them; and the proper temperature and moisture attended to and regulated, with as little variation as possible.

After your shoots and leaves have put forth, and you can discover little feeding roots or fibres on the side of your wood, you must shift your eyes, carefully and skilfully, into either a bed with proper earth, which will answer for the most easily propagated varieties, or preferably, for Delawares, &c. into small pots filled with fertile earth. These pots should hold about half a pint, or even less, and should then be plunged in a proper earth bed, in a frame or glass house,

and temperature regulated as before, except that it may not be kept up to quite the standard, as the plant will now begin to support itself; but it is always best to be particular at first with young plants. If your plants grow well, in about two or three weeks you will need to re-pot them, in pots a little larger, and in about the same length of time to shift pots again; and so to proceed until your plant has ripened its wood and acquired its full strength. During the latter part of the season, you must gradually harden them to bear sunlight and air, so that by the time they are ready to drop their leaves, they may be able to bear the open air without difficulty, and need no protection, except a slight one, from the frosts of winter.

If these plants should not be re-potted when their roots reach the outside, and fill the pot, they would become as it were stunted, and their health and usefulness permanently injured. And again, should they be put at first into pots too large, some varieties would fail to form good fibrous roots, and become poor, weak growing vines.

This method of propagating from single eyes requires care, observation, and constant attention, but first-class plants are produced by it, if properly conducted; and these plants being nearly all new growth, are among the best that can be grown, and in no way inferior, except in period of bearing, to the best and strongest layers.

There are other methods of propagation practised by some, such as grafting old vines under ground, laying down a long layer, running the blade of a knife through it between the joints, in several places, and inserting Delaware or other cut-

tings or grafts of two eyes, then burying all to the uppermost eye of the cuttings. Also by grafting on pieces of roots of the wild vine, in the same way as apple-root grafting, and sticking them in a hot-bed or open trench. Also budding the vine has been proposed; but we have but little faith in any of the above methods to produce good servicable vines, and only mention them as a part of the methods resorted to; and that the amateur cultivator may try his hand at them, if he thinks best, and find perhaps instruction and amusements in these, as he will in all operations connected with the vine.

ADDENDA.

We append a Letter upon the subject of Grape Culture, written by Mr. Z. R. Hinkley, of No. 25 Park Row, New York, containing an estimate of the profits of one acre of Vineyard, from year to year, up to the fifth year, which we have submitted to one of the most successful grape growers in this country, who pronounced the estimate of profit not at all exaggerated, but if any thing a little under the reality. We give it entire, only wishing to say, that the allowance for the sale of cuttings is, perhaps, a little over the present value, they not being worth quite as much now as when the article was written, on account of their having become more plentiful.

New York, 1863.

Gentlemen:

The object of labor is to bring with it corresponding results; and while we appreciate the growing of corn, wheat and potatoes, as staple commodities, we will endeavor to show that various fruits may be cultivated, without interfering in the least with the general management of the farm,

and which will prove much more remunerative, if not quite as indispensable. While I might mention, in their order, the cranberry, peach, pear, and apple, as indispensable fruits, yielding fair results, I shall endeavor to prove that the grape takes precedence of them all, both in certainty of crop and remuneration: for, while the average profit of the most remunerative of these amounts to about $500 per acre, per annum, the grape, at present prices, will amount to $1000,

Until recently the cultivation of the grape, in this region of country has been confined almost exclusively to the hot-house and garden: but now we can cite many instances where it is classed among the products of the farm, with the most encouraging results. I know of a gentleman who has realized the past year $1200 from the sale of grapes alone, the product of an acre of vines. These vines have been planted but three years, and have already paid all cost and interest, including land, etc. Next year their crop will be still larger, with better fruit; as the vine does not become fully established in bearing before the fifth or sixth year from planting. Certainty of results is a characteristic of grape culture: no fruit can compare with it in this regard; and, by obeying plain laws and directions, they can be as easily cultivated as corn or potatoes. All objections made to climate, soil, etc. as adverse to the successful culture of the grape in this country, are without foundation in fact. We have also native grapes, which, under proper cultivation, will equal any foreign varieties. Among these I would give the Delaware, Iona and Israella. These varieties are natives—hardy, early, productive, and of delicious flavor. They ripen about three weeks

earlier than the Isabella and Catawba, grown in the same locality, and are subject to none of their inherent diseases.

To make myself fully understood on this subject, I will add to what has already been said, an estimate of the cost of an acre of vines, including land, etc., and carry it along from year to year, to the end of the fifth year from planting, exhibiting the profit and loss of the same, during the term of years under consideration. I take the cost of the vines from the highest rates named in the wholesale price-lists for the present year, and place the land at $200 per acre, giving the farmer the advantage of a discount from the cost of both in this Estimate, in his favor.

Estimate—First Year.

To 2000 (No. 2) Delaware Vines, at 37 cts.	$740 00	CONTRA,	Cr.
" 1 acre of land for Vineyard,	200 00	By 250 bushels carrots grown between the rows, first year's planting,	$50 00
" Working and preparing the land for planting,	125 00	" Cash to balance account the 1st year,	1050 00
" Necessary stakes for an acre of Vines,	20 00		
" Labor on vines, etc. 1st year,	15 00		
	1100 00		1100 00

Second Year.

To bal. brought down,	$1050 00	CONTRA,	Cr.
" labor among the vines 2d year,	25 00	By cuttings this year from vines,	25 00
" Manuring ground, etc., 2d year,	20 00	" Cash to bal. acc't, 2d year,	1143 50
" 1 year's interest added in cash,	73 50		
	1168 50		1168 50

Third Year.

To balance brought down,	$1143 50	CONTRA,	Cr.
" labor among the vines this year,	30 00	By cuttings this year from vines,	35 00
" manuring and working ground,	20 00	" 3 tons of grapes this year, at 12 cts. per lb.,	720 00
" cost of wire and posts for an acre of vines,	150 00	" cash to bal. account, 3d year,	671 50
" 1 year's interest added to cost,	83 00		
	1426 50		1426 50

Fourth Year.

To balance brought down,	$671 50	CONTRA,	Cr.
" labor among the vines this year,	60 00	By cuttings this year,	50 00
" 1 year's interest added to cost,	47 00	" By 4 tons of grapes, this year, at 12 cts. per lb.,	960 00
" Cash to balance,	231 50		
	1010 00		1010 00

Fifth Year.

To labor among the vines, etc. the 5th year,	$75 00	CONTRA,	Cr.
" manuring the ground, etc.	25 00	By last year's balance account,	231 50
" Cash in treasury this year,	1157 70	" 1 year's interest on same,	16 20
		" cuttings this year,	50 00
		" 4 tons of grapes, at 12 cents per lb. (should be 5 tons this year,)	960 00
	$1257 70		$1257 70

The most important item in the foregoing estimate is the first cost of the vines: in fact it is the only item, with the farmer, of any account. Hence a wise selection of these is of the first importance. All orders committed to me will be faithfully filled, and true to name. All vines bought of me are warranted, or replaced if they fail to grow well by fair treatment. I will also give directions, when needed, in planting, training and pruning the vine; in fact, place the whole matter of purchase and culture of vines so favorably, that none can fail to see, I think, that it will be for their advantage to avail themselves of my superior facilities for furnishing every variety of grape-vines that can be grown in your region with profit.

Yours, etc., Z. R. HINCKLEY, 25 PARK ROW,

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